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Neural networks optimization through genetic algorithm searches: A review

(Review)

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Abstract

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Neural networks and genetic algorithms are the two sophisticated machine learning techniques presently attracting attention from scientists, engineers, and statisticians, among others. They have gained popularity in recent years. This paper presents a state of the art review of the research conducted on the optimization of neural networks through genetic algorithm searches. Optimization is aimed toward deviating from the limitations attributed to neural networks in order to solve complex and challenging problems. We provide an analysis and synthesis of the research published in this area according to the application domain, neural network design issues using genetic algorithms, types of neural networks and optimal values of genetic algorithm operators (population size, crossover rate and mutation rate). This study may provide a proper guide for novice as well as expert researchers in the design of evolutionary neural networks helping them choose suitable values of genetic algorithm operators for applications in a specific problem domain. Further research direction, which has not received much attention from scholars, is unveiled. © 2017 NSP.

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